

to recite that the kit comprises at least two separate compartments, wherein a first compartment comprises a composition comprises at least one compound chosen from ceramides and glycoceramides, at least one cationic polymer, and at least one amphoteric polymer, and a second compartment comprises a composition for chemical treatment of said keratinous fibers, wherein said composition for chemical treatment is an oxidizing composition. Support for this amendment can be found throughout the application as-filed. See e.g., page 1, line 17; page 3, lines 17-18; and page 4, line 6. Accordingly, this amendment does not add new matter.

In addition, these amendments do not raise any new issues or necessitate the undertaking of any additional search of the art by the Examiner. All of the elements and their claimed relationships were earlier recited in the claims as examined. Therefore, the Amendment under 37 C.F.R. § 1.116 should allow for immediate action by the Office. The proposed amendments, moreover, place the claims in better condition for allowance, or at least in better form for appeal, if necessary.

## **II. Rejections Under 35 U.S.C. § 112, Second Paragraph**

Claim 25 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention for the reasons set forth on page 2-3 of the present Office Action. Applicants respectfully traverse this rejection.

In order to meet the requirements of 35 U.S.C. § 112, second paragraph, the claims of an application must define the patentable subject matter with a reasonable degree of particularity and precision. M.P.E.P. § 2173.02. The Federal Circuit has

decided that the definiteness of claim language must be analyzed, not in a vacuum, but in light of the content of the application disclosure, the teachings of the prior art, and the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. *Id.* Further, breadth is not indefiniteness under § 112, second paragraph. M.P.E.P. § 2173.04.

Applicants respectfully submit that one of ordinary skill in the art would understand what is meant by the phrase "protein derivatives" as used in the present application and would therefore understand the metes and bounds of the presently claimed invention. In support of their position, Applicants submit herewith p. 1701-1703 from the International Cosmetic Ingredient Dictionary and Handbook, Eighth Edition, 2000, which recognizes the phrase "protein derivatives" as a term of art. Accordingly, Applicants maintain that the subject matter of claim 25 is defined with a reasonable degree of particularity and precision.

For at least the foregoing reasons, Applicants respectfully submit that this reason for rejection is in error and request that this rejection be withdrawn.

### III. Rejections Under 35 U.S.C. § 102

Claims 50-52 stand rejected under 35 U.S.C. § 102(b) as being anticipated by WO 97/15271 ("*Laurent*") as understood by U.S. Patent No. 6,251,378 for the reasons set forth on page 3 of the present Office Action. Applicants respectfully traverse this rejection.

A rejection under § 102 is only proper when the claimed subject matter is identically described or disclosed in the prior art. *In re Arkley*, 455 F.2d 586, 587

(CCPA 1972); *see also* M.P.E.P. §§ 706.02(a), 2131 ("For anticipation under 35 U.S.C. § 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly.").

Claim 50, as amended, recites that the kit comprises at least two separate compartments, wherein a first compartment comprises a composition comprises at least one compound chosen from ceramides and glycosceramides, at least one cationic polymer, and at least one amphoteric polymer, and a second compartment comprises a composition for chemical treatment of said keratinous fibers, wherein said composition for chemical treatment is an oxidizing composition. In contrast, the composition of *Laurent's* Example 2 does not teach or suggest at least one amphoteric polymer. See col. 9, lines 1-22. Thus, for at least this reason, *Laurent* does not expressly or inherently describe the multicompartment kit of claims 50-52.

Accordingly, Applicants respectfully request the withdrawal of this rejection.

#### IV. Rejections Under 35 U.S.C. § 103

Claims 1-3, 5-26 and 50-52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Laurent* (above) as understood by U.S. Patent No. 6,251,378 in view of U.S. Patent No. 5,656,258 to Cauwet et al ("*Cauwet*") for the reasons set forth on pages 3-5 of the present Office Action. Applicants respectfully traverse this rejection.

The Examiner contends that it would have been obvious to have modified the oxidation dyeing compositions of *Laurent* by the addition of MERQUAT 280 of *Cauwet*. See page 6 of the present Office Action. Applicants disagree.

One criteria an Examiner must demonstrate in order to establish a prima facie case of obviousness is that the reference teaches or suggests all the claim limitations. See M.P.E.P. § 2143. Here, even if, *arguendo*, the proposed modification was made, the resulting compositions would still be a dyeing composition. However, independent claim 1 recites that the composition comprising at least one compound chosen from ceramides and glycoceramides is not, *inter alia*, a dyeing composition. Accordingly, the cited references when combined as proposed by the Examiner fail to teach or suggest all of the limitations of claim 1.

The Examiner maintains that one of ordinary skill in the art would have been motivated to combine *Laurent* and *Cauwet* in order to benefit from the synergistic effect of the combined polymers for improving the disentanglement of hair as taught by *Cauwet*. Applicants disagree. As previously noted, the compositions of *Laurent* are for use in the oxidation dyeing of keratin fibers. In contrast, there is no mention in *Cauwet* of oxidation dyeing as *Cauwet* is drawn to cosmetic compositions for the hair and the skin containing conditioning polymers. See col. 1, lines 4-6. The Examiner asserts that “*Cauwet* clearly teaches that the disentangling compositions are particularly useful in compositions for dyeing hair.” See page 4 of the present Office Action (citing col. 6, lines 11-25). First, Applicants note that, at the cited portion of the document, *Cauwet* merely states that the compositions may be in the variety forms listed, and not that they are “particularly useful in compositions for dyeing hair” as alleged by the Examiner. Further, “dyeing” is not synonymous oxidation dyeing.

For at least the foregoing reasons, Applicants maintain that there would have been the requisite motivation to use the compositions of *Cauwet* in an oxidation dyeing

composition. Accordingly, Applicants respectfully request the withdrawal of this § 103(a) rejection.

**V. Conclusion**

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration of the pending claims and reexamination of the application. The timely allowance of the pending claims is respectfully requested.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

By: 

Mark D. Sweet  
Reg. No. 41,469

Dated: January 23, 2003

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com



RECEIVED

JAN 28 2003

TECH CENTER 1600/2900

Attorney Docket No. 05725.0633

Application No. 09/648,376

Appendix

Version with markings to show changes made pursuant to 37 C.F.R. § 1.121(c)(1)(ii):

-- 1. (Amended) A pretreatment composition comprising:

at least one compound chosen from ceramides and glycosceramides,

at least one cationic polymer, and

at least one amphoteric polymer,

wherein said pretreatment composition is not a dyeing composition, a bleaching composition, a permanent waving composition, a relaxing composition, or a straightening composition.

50. (Amended) A multi-compartment kit for chemical treatment of keratinous fibers, said kit comprising at least two separate compartments, wherein

a first compartment [contains] comprises a composition comprising

at least one compound chosen from ceramides and glycosceramides,

at least one cationic polymer, and

at least one amphoteric polymer, and

a second compartment [contains] comprises a composition for chemical treatment of said keratinous fibers,

wherein said composition for chemical treatment is an oxidizing composition.--

FINNEGAN  
HENDERSON  
FARABOW  
GARRETT &  
DUNNER LLP

1300 I Street, NW  
Washington, DC 20005  
202.408.4000  
Fax 202.408.4400  
www.finnegan.com

---

# **International Cosmetic Ingredient Dictionary and Handbook**

**Eighth Edition  
2000**

**Editors**

**John A. Wenninger  
Rena C. Canterbury  
G. N. McEwen, Jr., Ph.D., J.D.**

**Volume 2**

Property of  
Finnegan, Henderson, Farabov  
Garrett & Dunner Library  
1300 I Street, N.W., #700  
Washington, DC 20005

***Published by***  
**The Cosmetic, Toiletry, and Fragrance Association**  
1101 17th Street, NW, Suite 300  
Washington, D.C. 20036-4702

---

Sodium Glucuronate  
Sodium Riboflavin Phosphate  
Sorbeth-6  
Sorbeth-20  
Sorbeth-30  
Sorbeth-40

Sorbitol  
Sorbityl Acetate  
Sorbityl Furfural  
Sorbityl Silanediol  
Sucrose  
Thioglycerin

Propylene Glycol  
Tris(Hydroxymethyl)Nitromethane  
Tromethamine  
Xylitol  
Xylose  
Zinc Glucoheptonate

## Protein Derivatives (Including salts)

Protein Derivatives form a broad category of materials which are prepared from *Proteins* by partial hydrolysis and/or by reaction with other chemicals to yield cosmetically acceptable raw materials. This definition excludes the ultimate hydrolysis product of proteins, the *Amino Acids* and their derivatives.

Many Protein Derivatives are prepared by subjecting animal or vegetable proteins to enzymatic or chemical hydrolysis. The resulting polypeptides may then be further chemically modified, usually by amidation with a reactive *Fatty Acid* derivative. The acidity of the resulting acylated polypeptide (from the presence of the free carboxyl groups on the polypeptide) is then neutralized with a suitable base to form a water-soluble product which possesses detergent and substantive properties.

Protein hydrolysates (e.g., Hydrolyzed Elastin) and acylated materials (e.g., TEA-Oleoyl Hydrolyzed Collagen) are used as conditioning agents in hair and skin products.

Acetyl Hexapeptide-1  
Acetylmethionyl Methylsilanol Elastinate  
Aluminum Capryloyl Hydrolyzed Collagen  
Ammonium Hydrolyzed Collagen  
AMP-Isostearoyl Gelatin/Keratin Amino Acids/  
Lysine Hydroxypropyltrimonium Chloride  
AMP-Isostearoyl Hydrolyzed Collagen  
AMP-Isostearoyl Hydrolyzed Elastin  
AMP-Isostearoyl Hydrolyzed Soy Protein  
AMP-Isostearoyl Hydrolyzed Wheat Protein  
AMPD-Isostearoyl Hydrolyzed Collagen  
AMPD-Rosin Hydrolyzed Collagen  
Ascorbic Acid Polypeptide  
Atelocollagen  
Bean Palmitate  
Benzylidenecamphor Hydrolyzed Collagen  
Sulfonamide  
Benzyltrimonium Hydrolyzed Collagen  
Calcium Caseinate  
Capryloyl Hydrolyzed Collagen  
Capryloyl Hydrolyzed Keratin  
Cholecalciferol Polypeptide  
Cocamidopropyl Dimethylamine Hydrolyzed  
Collagen  
Cocamidopropyl Dimethylaminohydroxypropyl  
Hydrolyzed Collagen  
Cocamidopropyl Dimethylammonium C8-16  
Isoalkylsuccinyl Lactoglobulin Sulfonate  
Cocamidopropyltrimonium Hydroxypropyl  
Hydrolyzed Collagen  
Cocodimonium Hydroxypropyl Hydrolyzed Casein  
Cocodimonium Hydroxypropyl Hydrolyzed  
Collagen  
Cocodimonium Hydroxypropyl Hydrolyzed Hair  
Keratin  
Cocodimonium Hydroxypropyl Hydrolyzed Keratin

Cocodimonium Hydroxypropyl Hydrolyzed Rice  
Protein  
Cocodimonium Hydroxypropyl Hydrolyzed Silk  
Cocodimonium Hydroxypropyl Hydrolyzed Soy  
Protein  
Cocoyl Hydrolyzed Collagen  
Cocoyl Hydrolyzed Keratin  
Cocoyl Hydrolyzed Soy Protein  
Desamido Collagen  
Diethylene Tricaseinamide  
Ethyl Ester of Hydrolyzed Animal Protein  
Ethyl Ester of Hydrolyzed Keratin  
Ethyl Ester of Hydrolyzed Silk  
Gelatin/Keratin Amino Acids/Lysine  
Hydroxypropyltrimonium Chloride  
Gelatin/Lysine/Polyacrylamide  
Hydroxypropyltrimonium Chloride  
Glyceryl Collagenate  
Hexapeptide-1  
Hexapeptide-2  
Hydrolyzed Actin  
Hydrolyzed Albumen  
Hydrolyzed Brazil Nut Protein  
Hydrolyzed Casein  
Hydrolyzed Collagen  
Hydrolyzed Collagen PG-Propyl Methylsilanediol  
Hydrolyzed Collagen PG-Propyl Silanetriol  
Hydrolyzed Conchiolin Protein  
Hydrolyzed Corn Protein  
Hydrolyzed Cottonseed Protein  
Hydrolyzed Egg Protein  
Hydrolyzed Elastin  
Hydrolyzed Extensin  
Hydrolyzed Fibronectin  
Hydrolyzed Gadidae Protein  
Hydrolyzed Hair Keratin

Hydrolyzed Hemoglobin  
Hydrolyzed Human Placental Protein  
Hydrolyzed Keratin  
Hydrolyzed Keratin PG-Propyl Methylsilanediol  
Hydrolyzed Lactalbumin  
Hydrolyzed Lupine Protein  
Hydrolyzed Maple Sycamore Protein  
Hydrolyzed Milk Protein  
Hydrolyzed Milt  
Hydrolyzed Oat Protein  
Hydrolyzed Pea Protein  
Hydrolyzed Placental Protein  
Hydrolyzed Potato Protein  
Hydrolyzed Reticulin  
Hydrolyzed Rice Bran Protein  
Hydrolyzed Rice Protein  
Hydrolyzed Sericin  
Hydrolyzed Serum Protein  
Hydrolyzed Silk  
Hydrolyzed Silk PG-Propyl Methylsilanediol  
Hydrolyzed Soy Protein  
Hydrolyzed Soy Protein/Dimethicone Copolyol  
Acetate  
Hydrolyzed Soy Protein PG-Propyl  
Methylsilanediol  
Hydrolyzed Spinal Protein  
Hydrolyzed Sweet Almond Protein  
Hydrolyzed Vegetable Protein  
Hydrolyzed Wheat Gluten  
Hydrolyzed Wheat Protein  
Hydrolyzed Wheat Protein/Dimethicone Copolyol  
Acetate  
Hydrolyzed Wheat Protein/PEG-20 Acetate  
Copolymer  
Hydrolyzed Wheat Protein PG-Propyl  
Methylsilanediol

The inclusion of any compound in the *Dictionary and Handbook* does not indicate that use of that substance as a cosmetic ingredient complies with the laws and regulations governing such use in the United States or any other country.



- Hydrolyzed Wheat Protein PG-Propyl Silanetriol  
Hydrolyzed Yeast Protein  
Hydroxypropyltrimonium Gelatin  
Hydroxypropyltrimonium Hydrolyzed Casein  
Hydroxypropyltrimonium Hydrolyzed Collagen  
Hydroxypropyltrimonium Hydrolyzed Conchiolin Protein  
Hydroxypropyltrimonium Hydrolyzed Keratin  
Hydroxypropyltrimonium Hydrolyzed Rice Bran Protein  
Hydroxypropyltrimonium Hydrolyzed Silk  
Hydroxypropyltrimonium Hydrolyzed Soy Protein  
Hydroxypropyltrimonium Hydrolyzed Vegetable Protein  
Hydroxypropyltrimonium Hydrolyzed Wheat Protein  
Hydroxypropyltrimonium Hydrolyzed Whey  
Isostearoyl Hydrolyzed Collagen  
Lactoyl Methylsilanol Elastinate  
Laurdimonium Hydroxypropyl Hydrolyzed Soy Protein  
Laurdimonium Hydroxypropyl Hydrolyzed Wheat Protein  
Lauroyl Hydrolyzed Collagen  
Lauroyl Hydrolyzed Elastin  
Laurylidimonium Hydroxypropyl Hydrolyzed Casein  
Laurylidimonium Hydroxypropyl Hydrolyzed Collagen  
Laurylidimonium Hydroxypropyl Hydrolyzed Keratin  
Laurylidimonium Hydroxypropyl Hydrolyzed Silk  
Laurylidimonium Hydroxypropyl Hydrolyzed Soy Protein  
MEA-Hydrolyzed Collagen  
MEA-Hydrolyzed Silk  
Methylsilanol Elastinate  
Methylsilanol Spirulinate  
Myristoyl Hydrolyzed Collagen  
Oleamidopropyl Dimethylamine Hydrolyzed Collagen  
Oleamidopropyldimonium Hydroxypropyl Hydrolyzed Collagen  
Oleoyl Hydrolyzed Collagen  
Olivoyl Hydrolyzed Wheat Protein  
Oxidized Keratin  
Palmitoyl Hydrolyzed Collagen  
Palmitoyl Hydrolyzed Milk Protein  
Palmitoyl Hydrolyzed Wheat Protein  
Palmitoyl Oligopeptide  
Palmitoyl Pentapeptide-2  
Palmitoyl Pentapeptide-3  
Pantothenic Acid Polypeptide  
Pea Palmitate  
PEG-2 Milk Solids  
Pentapeptide-1  
Potassium Abietoyl Hydrolyzed Collagen  
Potassium Abietoyl Hydrolyzed Soy Protein  
Potassium Caseinate  
Potassium Cocoyl Hydrolyzed Casein  
Potassium Cocoyl Hydrolyzed Collagen  
Potassium Cocoyl Hydrolyzed Corn Protein  
Potassium Cocoyl Hydrolyzed Keratin  
Potassium Cocoyl Hydrolyzed Potato Protein  
Potassium Cocoyl Hydrolyzed Rice Bran Protein  
Potassium Cocoyl Hydrolyzed Rice Protein  
Potassium Cocoyl Hydrolyzed Silk  
Potassium Cocoyl Hydrolyzed Soy Protein  
Potassium Cocoyl Hydrolyzed Wheat Protein  
Potassium Cocoyl Hydrolyzed Yeast Protein  
Potassium Lauroyl Hydrolyzed Collagen  
Potassium Lauroyl Hydrolyzed Soy Protein  
Potassium Myristoyl Hydrolyzed Collagen  
Potassium Oleoyl Hydrolyzed Collagen  
Potassium Palmitoyl Hydrolyzed Wheat Protein  
Potassium Stearoyl Hydrolyzed Collagen  
Potassium Undecylenoyl Hydrolyzed Collagen  
Potassium Undecylenoyl Hydrolyzed Corn Protein  
Potassium Undecylenoyl Hydrolyzed Soy Protein  
Potassium Undecylenoyl Hydrolyzed Wheat Protein  
Procollagen  
Propyltrimonium Hydrolyzed Collagen  
Propyltrimonium Hydrolyzed Soy Protein  
Propyltrimonium Hydrolyzed Wheat Protein  
Quaternium-76 Hydrolyzed Collagen  
Quaternium-79 Hydrolyzed Collagen  
Quaternium-79 Hydrolyzed Keratin  
Quaternium-79 Hydrolyzed Milk Protein  
Quaternium-79 Hydrolyzed Silk  
Quaternium-79 Hydrolyzed Soy Protein  
Quaternium-79 Hydrolyzed Wheat Protein  
Rosin Hydrolyzed Collagen  
Sericin  
Sodium Caseinate  
Sodium C8-16 Isoalkylsuccinyl Lactoglobulin Sulfonate  
Sodium Cocoyl Hydrolyzed Collagen  
Sodium Cocoyl Hydrolyzed Keratin  
Sodium Cocoyl Hydrolyzed Rice Protein  
Sodium Cocoyl Hydrolyzed Soy Protein  
Sodium Cocoyl Hydrolyzed Wheat Protein  
Sodium Hydrolyzed Casein  
Sodium Lauroyl Hydrolyzed Collagen  
Sodium Lauroyl Hydrolyzed Silk  
Sodium Myristoyl Hydrolyzed Collagen  
Sodium Oleoyl Hydrolyzed Collagen  
Sodium Palmitoyl Hydrolyzed Collagen  
Sodium Palmitoyl Hydrolyzed Wheat Protein  
Sodium Soy Hydrolyzed Collagen  
Sodium Stearoyl Casein  
Sodium Stearoyl Hydrolyzed Collagen  
Sodium Stearoyl Hydrolyzed Corn Protein  
Sodium Stearoyl Hydrolyzed Silk  
Sodium Stearoyl Hydrolyzed Soy Protein  
Sodium Stearoyl Oat Protein  
Sodium Stearoyl Pea Protein  
Sodium Stearoyl Soy Protein  
Sodium Succinoyl Gelatin  
Sodium/TEA-Lauroyl Hydrolyzed Collagen  
Sodium/TEA-Lauroyl Hydrolyzed Keratin  
Sodium/TEA-Undecylenoyl Hydrolyzed Collagen  
Sodium/TEA-Undecylenoyl Hydrolyzed Corn Protein  
Sodium/TEA-Undecylenoyl Hydrolyzed Soy Protein  
Sodium/TEA-Undecylenoyl Hydrolyzed Wheat Protein  
Soluble Collagen  
Stearidimonium Hydroxypropyl Hydrolyzed Casein  
Stearidimonium Hydroxypropyl Hydrolyzed Collagen  
Stearidimonium Hydroxypropyl Hydrolyzed Keratin  
Stearidimonium Hydroxypropyl Hydrolyzed Rice Protein  
Stearidimonium Hydroxypropyl Hydrolyzed Silk  
Stearidimonium Hydroxypropyl Hydrolyzed Soy Protein  
Stearidimonium Hydroxypropyl Hydrolyzed Vegetable Protein  
Stearidimonium Hydroxypropyl Hydrolyzed Wheat Protein  
Steartrimonium Hydroxyethyl Hydrolyzed Collagen  
Sulfurized Hydrolyzed Corn Protein  
Sulfurized Hydrolyzed Zein  
Synthetic Thymus Hydrolysate  
TEA-Abietoyl Hydrolyzed Collagen  
TEA-Cocoyl Hydrolyzed Collagen  
TEA-Cocoyl Hydrolyzed Soy Protein  
TEA-Isostearoyl Hydrolyzed Collagen  
TEA-Lauroyl Hydrolyzed Collagen  
TEA-Myristoyl Hydrolyzed Collagen  
TEA-Oleoyl Hydrolyzed Collagen  
TEA-Undecylenoyl Hydrolyzed Collagen  
Triethonium Hydrolyzed Collagen Ethosulfate  
Tripeptide-1  
Undecylenoyl Hydrolyzed Collagen  
Wheatgermamidopropyl Dimethylamine Hydrolyzed Collagen  
Wheatgermamidopropyl Dimethylamine Hydrolyzed Wheat Protein  
Wheat Germamidopropyldimonium Hydroxypropyl Hydrolyzed Wheat Protein  
Yeast Palmitate  
Zea Mays (Corn) Gluten Protein  
Zinc Hydrolyzed Collagen  
Zinc Undecylenoyl Hydrolyzed Wheat Protein

## Proteins (Including enzymes)

Proteins are naturally occurring, long-chain, high molecular weight polymers formed by the self-condensation of *Amino Acids* (an amidation reaction). Only a few natural proteins have found use in cosmetics or toiletries, where they are employed for their esthetic and conditioning properties.

The inclusion of any compound in the *Dictionary and Handbook* does not indicate that use of that substance as a cosmetic ingredient complies with the laws and regulations governing such use in the United States or any other country.

Naturally occurring, water-soluble proteins are somewhat unstable and tend to precipitate or denature when exposed to high temperatures or concentrated salt solutions. Water-insoluble proteins are less sensitive to denaturation, but like all proteins are subject to hydrolysis by enzymes as well as chemical reagents, such as acids or bases.

Almost all enzymes are proteins which possess the ability to catalyze various chemical reactions (synthetic or hydrolytic). Typical are Urease (which produces ammonia from urea), Catalase (which produces oxygen from peroxides), and Papain (which can hydrolyze other proteins).

In cosmetics, Proteins find use as conditioning agents and as film formers (upon drying). Enzymes are employed in cosmetics for their specific catalytic effects.

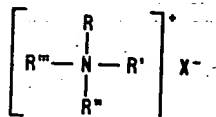
Acetyl Pentapeptide-1  
Acetyl Tetrapeptide-2  
Acetyl Triptide-1  
Albumen  
Amylase  
Amyloglucosidase  
Arginine/Lysine Polypeptide  
Bromelain  
Casein  
Catalase  
Collagen  
Crystallins  
Cytochrome C  
Deoxyribonuclease  
Elastin  
Fibronectin  
Ficin  
Gelatin  
Gliadin  
Glucose Oxidase

Glycoproteins  
Hexyldecyl Ester of Hydrolyzed Collagen  
Horseradish Peroxidase  
Human Placental Enzymes  
Human Placental Protein  
Iodized Corn Protein  
Kallikrein  
Keratin  
Lactoferrin  
Lactoglobulin  
Lactoperoxidase  
Lipase  
Lysozyme  
Milk Protein  
Myristoyl Glycine/Histidine/Lysine Polypeptide  
Nisin  
Oxido Reductases  
Pancreatin  
Papain  
Pepsin

Placental Protein  
Protease  
Prunus Amygdalus Dulcis (Sweet Almond) Protein  
Saccharomyces Polypeptides  
Serum Albumin  
Serum Protein  
Silk  
Sodium Stearoyl Lactalbumin  
Soluble Proteoglycan  
Soybean Palmitate  
Subtilisin  
Superoxide Dismutase  
Sutlains  
Tetrapeptide-1  
Triticum Vulgare (Wheat) Germ Protein  
Triticum Vulgare (Wheat) Protein  
Urease  
Whey Protein  
Zein

## Quaternary Ammonium Compounds (Including salts)

Quaternary Ammonium Compounds (generally referred to as quats) are positively charged tetra-substituted nitrogen derivatives of the following structure:



In which R, R', R'', and R''' may be the same or different, but may not be hydrogen; and in which X<sup>-</sup> represents a typical anion, e.g., chloride or methosulfate. If any or some of the R groups are hydrogen, the compounds of the above structures are amine salts (see *Organic Salts*) or amphoteric (see *Alkylamido Alkylamines*, *Alkyl Substituted Amino Acids*). The R groups may be aliphatic and carry additional substituents. The nitrogen atom may be part of a heterocyclic or aromatic ring system as (e.g., Cetethyl Morpholinium Ethosulfate or Steapyrium Chloride).

The quaternary nitrogen atom in these compounds always carries a cationic charge regardless of the pH of the system. At high pHs, the anion may be OH<sup>-</sup>, which may reduce the normally high water solubility of quaternary ammonium compounds.

The inclusion of any compound in the *Dictionary and Handbook* does not indicate that use of that substance as a cosmetic ingredient complies with the laws and regulations governing such use in the United States or any other country.